Additional comments in Dockets 07-52 and 08-7.

Filed in both dockets per FCC multiple docket filing procedures.

If late filed for any reason, I move that they be included as original comments for a complete record. This filing includes an article that brings forward some information that the Commission may not receive any other way.

I just found this article via a blog on wimax.com.

FTTH 2008: Internet set to reach Zetabyte heights by 2015

Emerging applications drive continued growth

by Sean Buckley
Thu. February 28, 2008

It seems fitting at this week's FTTH Council Europe event in Paris, France—an event where the focus is on delivering tens and potentially hundreds of megabits of bandwidth to the home—that the growth of the Internet is a major discussion point.

Bret Swanson, a senior fellow at Seattle's Discovery Institute, spoke at Wednesday's opening keynote, "Estimating the Exaflood: The Impact of Video and Rich Media on the Internet." Citing the lesser-known French economist Jean-Baptiste Say's theory of "supply creates its own demand," Swanson said the growth of new Internet applications is on a similar path.

In his 1803 Treatise on Political Economy, Say theorized two basic macro and micro ideas about economies.

On a macro level, he theorized economies were not built on innovative new supplies of goods. From a micro sense, Say believed entrepreneurs supplying new products had the ability to anticipate the demands of the consumer.

"My view is that Jean-Baptiste Say would be a great believer in FTTH and the enormous increases in bandwidth we're about to see across the globe with FTTH," Swanson said.

"One of the key questions some people have about FTTH is [whether there is] enough demand for all of this new bandwidth you want to supply and Jean-Baptiste Say would say, 'Yes, build it and they will

come'," he added.
The third screen effect

Following technology pundit George Gilder's logic in Life After TV, written more than 18 years ago, the Internet increasingly is becoming a medium through which users will view and retrieve their video content.

"In this book he envisioned the Internet disrupting previous modes of broadcast media, and I do see that as coming through," Swanson said. Users can now access low-resolution homemade video content (e.g., You Tube) or movies from Cinema Now and view them on various devices (e.g., laptop, iPOD, mobile phone). The ability of users to take content from the Web and view it on whatever device they wish is breaking the boundaries of content viewing and delivery.

Take EMBARQ's recently launched Broadband Online Video Store (see: EMBARQ lights up the third screen). EMBARQ users with at least an ADSL2+ connection can visit a customized Web portal and choose among 2,000 broadcast TV shows or 5,000 songs or movies. From there, the user can transfer them to either an iPOD or a DVD then view them on a TV or portable device.

Swanson certainly is not alone in his thinking about the Internet's role as an entertainment platform.

Other technology pundits including Cogent Communications' founder and CEO Dave Schaeffer take it a step further saying the Internet will not eventually diminish the traditional broadcaster's delivery of video (See: Cogent's clean sheet Ethernet approach and Audiocast: Cogent scales the Ethernet curve). As Schaeffer sees it, the Internet is "becoming a replacement for television, for cable and for satellite. In many ways we believe our competition is not so much the phone companies anymore; it really is the CBSs, NBCs or people who have a model distributing content through these special purpose networks."
Wake of the Zetaflood

Until the Netscape browser appeared in the mid-1990s, the growth of the Internet—mainly an application used by scientists and military leaders—was next to nil.

What took the Internet out of the battlefield and labs and into the mainstream were simple user-friendly features such as the World Wide Web and the Netscape browser.

Swanson believes the Internet's emerging role as an entertainment platform, or what he calls Phase 3 of the Internet, will further the business case and demand for FTTH networks.

"The world has come to the Internet for the last 10 to 15 years, [but] the true broadband visual video

Internet is now just starting," Swanson said. "It's changing the nature of Internet traffic and it will greatly change the volume of network traffic. Phase 3 will mostly be enabled by fiber to the home."

The Internet began to take off in the mid-'90s and growth has continued to accelerate at a rapid rate. Between 1996 and 2000, research shows it grew 100 percent each year, while it leveled off slightly in the 2000s at 50 percent to 70 percent per year.

Three other factors will drive Internet traffic to reach Exabyte and eventually Zetabyte levels of growth: video applications, the "Global Sensorium," and the "LAN's End."

By mid-2007 YouTube alone was already streaming 600 Petabytes, making up 7 percent of total U.S. Internet traffic. If and when YouTube decides to start offering high-definition content, the growth could reach 12 Exabytes per year.

Of course, there's the IPTV question. While still an early market opportunity, Swanson argues, "last mile bandwidth will have to increase between 10- and 100-fold to accommodate IPTV applications." But video and entertainment is just one of the applications driving growth. New commercial-based applications such as RFID and outsourced LANs will have a continued effect as enterprises embrace them.

In the Global Sensorium, images generated from mobile camera phones and surveillance video with IP addresses will also be large consumers of Internet traffic. Meanwhile, the LAN's End illustrates a growing trust by businesses to have their applications and even data stored at a collection point hosted by an outside party.

All of these new elements combined could lead ultimately to what Swanson calls a Zetaflood of Internet traffic.

"By 2015, Internet traffic could reach 1000 Exabytes or 1 Zetabyte," he said. "To get there, Internet traffic in the U.S. would rise about 50-fold vs. the 2006 figure. This is an enormous challenge that would require probably in the neighborhood of US$100 billion of investment in last-mile FTTH, but also core and metro networks by 2012. Similar investments would have to be made in Europe and Asia."

Source:
http://www.telecommagazine.com/newsglobe/article.asp?HH_ID=AR_3997
Retrieved 7 March 2008.

It is apparent that many providers are falling behind the growth curve of the Internet from this article.

The FCC must take steps to ensure that providers do not stifle what the rest of the world is demanding of the Internet these days and in the very near future. See my previous comments in this proceeding about throttling and other restrictive practices.

Also, a look at speed tiering must be done. Speed tiering is where you pay one price for a lower speed and another price for a highre speed. Here's an example from a Qwest ad for business DSL service.

$40 - 1.5 Mbps speed.
$55 - 7 Mbps speed.

Similar packages are being offered by Digis.net for home users.

The big problem is that when a user downloads a file, the faster the download speed the sooner the net will be free for the next person who needs a download. So if it takes 20 minutes to download a certain file, the node will congest for that amount of time if others go to download the same file at that same speed. However, if the same size file can be downloaded in five minutes, everyone else can get their downloads faster and the net doesn't congest as often or as frequently.

The article speaks of further improvements to speed, the FCC shall make sure that everyone can have these speeds when available at no extra cost.